

Ch 6 Notes B.ink

Ch 6 Binding

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Chemical Bond - Link b/w atoms that results from a mutual attraction of 1 atom's nucleus for another atom's e^- 's (vice versa)

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Covalent

ionic

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Chemical Bond - Link b/w atoms that results
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Covalent
 e^- shared b/w atoms

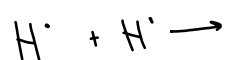
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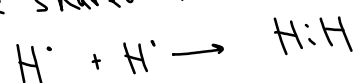
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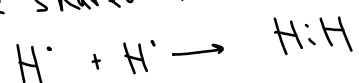


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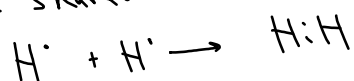


Ionic
attraction b/w oppositely charged
ions (+ & -)

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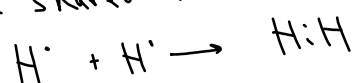


Ionic
attraction b/w oppositely charged
ions (+ & -)
ions form through e^- transfer

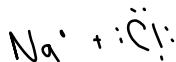
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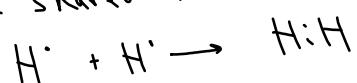
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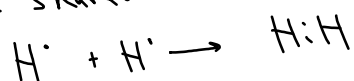
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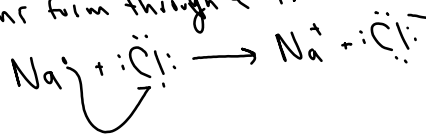
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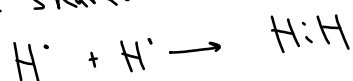
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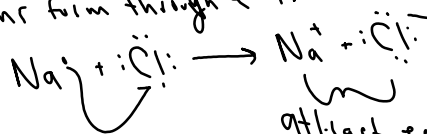
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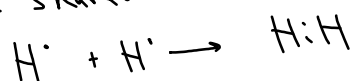


attract each other
& form an ionic bond.

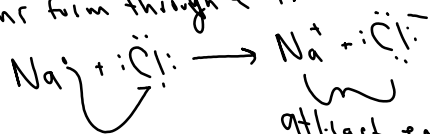
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Chemical Bond - Link b/w atoms that results
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Covalent - form b/w 2 or more
non metals
 e^- shared b/w atoms



Ionic
attraction b/w oppositely charged
ions (+ & -)
ions form through e^- transfer

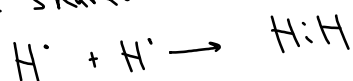


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Ch 6 Bonding

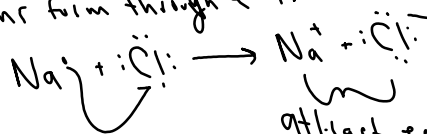
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Covalent - form b/w 2 or more nonmetals
 e^- shared b/w atoms



Ionic - form b/w metal + nonmetal

attraction b/w oppositely charged ions (+ & -)
 ions form through e^- transfer



attract each other & form an ionic bond.

All c are not shared equally.

All e^- are not shared equally.
↳ Sharing can vary based on differences in
e-neg's b/w elements

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<u># difference</u>	<u>Dif in electr</u>	<u>Type of Bond</u>	<u>Σx</u>
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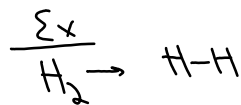
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<u># difference</u>	<u>Dif in neg</u> small difference	<u>Type of Bond</u>	<u>Σx</u>
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difference Diff in neg
 small difference

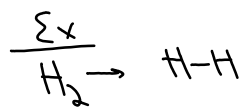
Type of Bond



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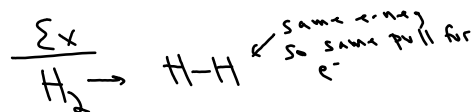
difference Dif in neg
 small difference

Type of Bond
nonpolar
covalent



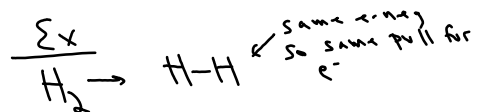
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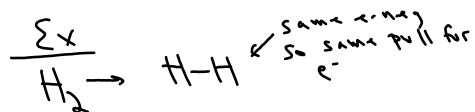
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0.0-0.3	small difference	nonpolar covalent



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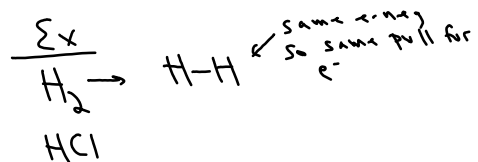
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	Medium Difference	



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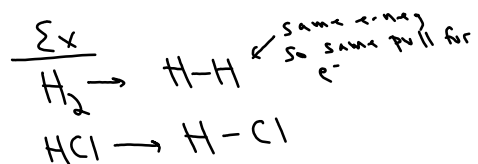
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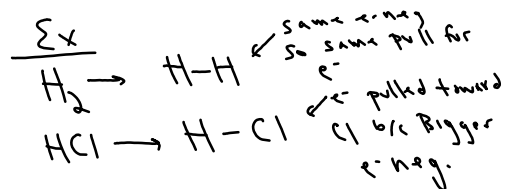
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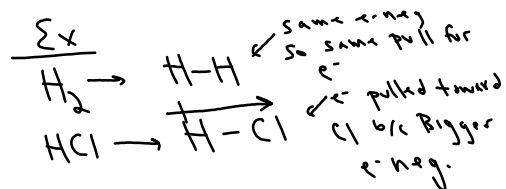
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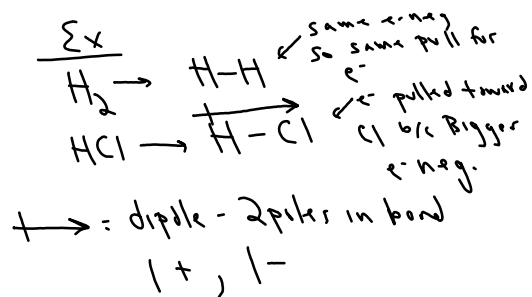
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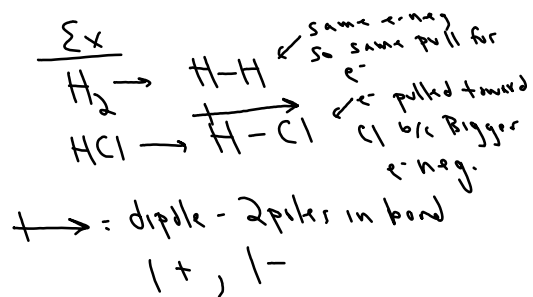
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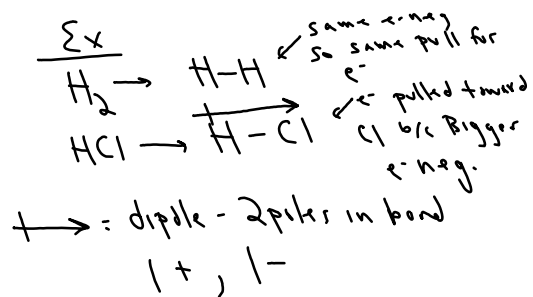
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# difference	Diff in electr	Type of Bond
0.0 - 0.3	Small difference	nonpolar covalent
0.3 - 1.7	Medium Difference	Polar Covalent

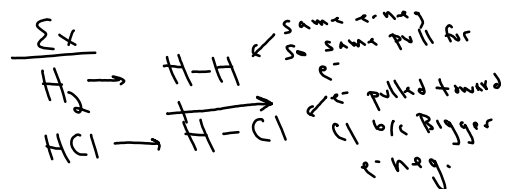


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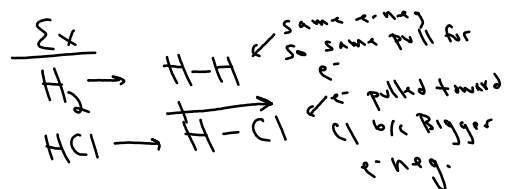
BIG Diff



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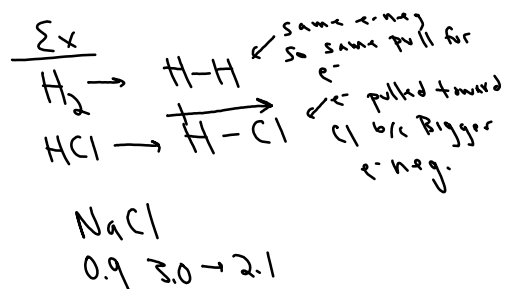
# difference	Diff in electr	Type of Bond
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0.3 - 1.7	Medium Difference	Polar Covalent
1.7 - 4.0	BIG Diff	Ionic Bond



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1.7 - 4.0	BIG Diff	Ionic Bond



Ch 6 Notes B.ink

why do Bonds firm?

why do Bonds form?
↳ so that atoms become more stable

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Min Define RE + BondLength!

Bond Length - dist b/w 2 nuclei
of Bonded atoms

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Bond Energy -

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Bond Energy - E req'd to break a chemical
Bond

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Inverse
Relation

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BL↓, BE↑

Depicting Molecules . "Structures of Molecules"

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Octet Rule

Depicting Molecules . "Structures of Molecules"

Octet Rule - bonds form by gaining, losing, or sharing e⁻
so that each atom has a full outer shell of e⁻

Depicting Molecules . "Structures of Molecules"

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Show covalent bonds w/ Lewis structures

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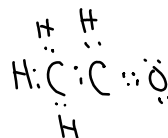
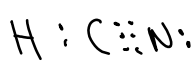
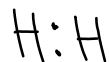
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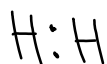
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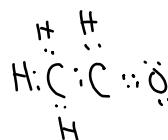
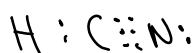
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Show covalent bonds w/ Lewis structures



↑
shared e⁻ pair
Bond

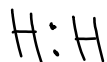


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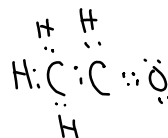
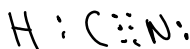
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Show covalent bonds w/ Lewis structures

1 bond = $2e^-$



↑
shared e^- pair
Bond

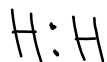


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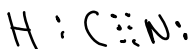
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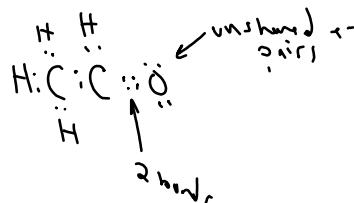
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↑
shared e^- pair
Bond



↑
3 bonds

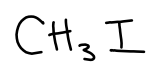


Ch 6 Notes B.ink

Drawing Lewis Structures

Drawing Lewis Structures

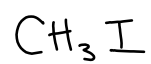
Draw the structure of iodo methane



Drawing Lewis Structures

1. Find the total valence from all the atoms

Draw the structure of iodomethane



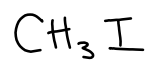
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Drawing Lewis Structures

1. Find the total val^{e-} from all the atoms

$$\text{C: } 1 \times 4 \text{ val}^e = 4e^-$$

Draw the structure of iodomethane



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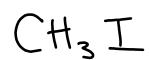
Drawing Lewis Structures

1. Find the total valence from all the atoms

C: $1 \times 4 \text{ val e}^- = 4 \text{ e}^-$

H: $3 \times 1 \text{ val e}^-$

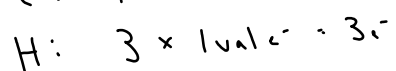
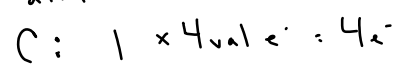
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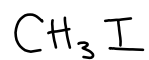
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Drawing Lewis structures

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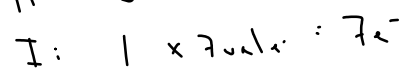
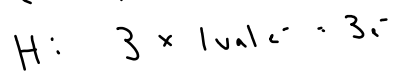
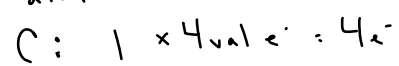


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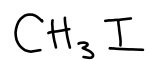


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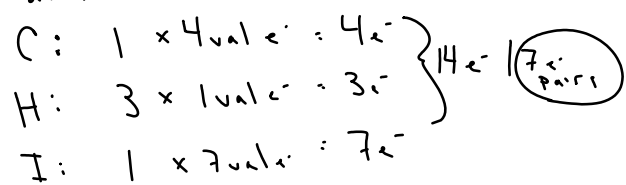
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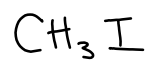
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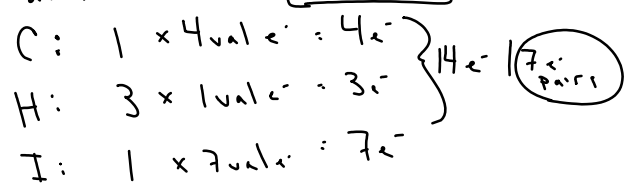


Draw the structure of iodo methane

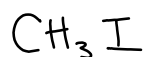


Drawing Lewis structures

1. Find the total val^{e-} from all the atoms → 7^{e-} pairs



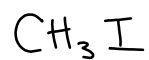
Draw the structure of iodo methane



Drawing Lewis Structures

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2. Arrange atoms in a simple layout for the molec.

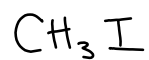
Draw the structure of iodo methane



Drawing Lewis Structures

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H is NEVER in middle

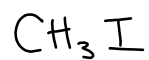
Draw the structure of iodo methane



Drawing Lewis Structures

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C is ALWAYS " "

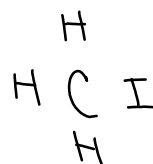
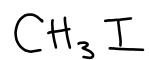
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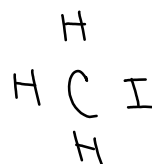
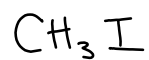
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Drawing Lewis Structures

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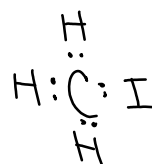
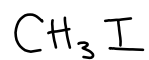
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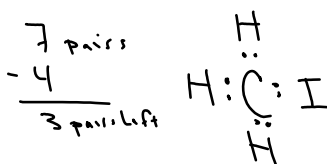
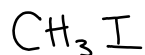
Draw the structure of iodo methane



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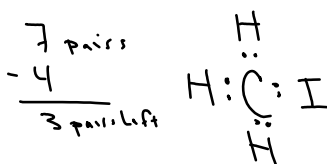
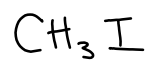
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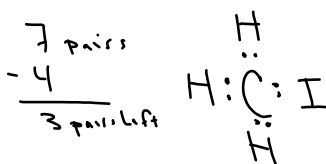
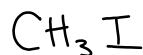
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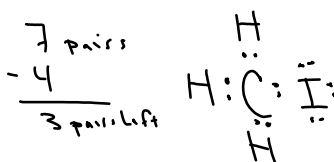
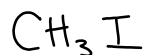
Draw the structure of iodomethane



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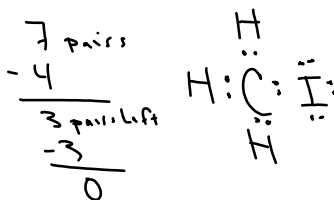
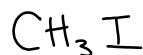
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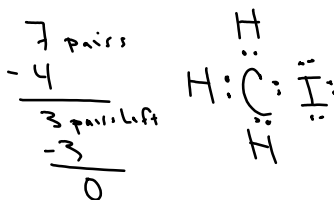
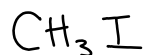
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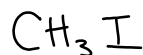
Draw the structure of iodo methane



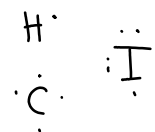
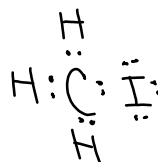
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Draw the structure of iodo methane



$$\begin{array}{r} 7 \text{ pairs} \\ - 4 \\ \hline 3 \text{ pairs left} \\ - 3 \\ \hline 0 \end{array}$$

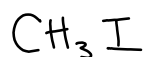


Ch 6 Notes B.ink

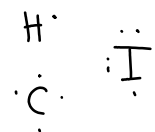
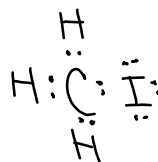
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Draw the structure of iodomethane



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Drawing Lewis Structures

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Draw the structure of 1000 methane

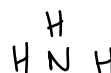


Drawing Lewis Structures

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Draw the structure of 1000 methane

NH₃ 4e⁻ pairs

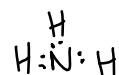


Drawing Lewis Structures

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Draw the structure of 1000 methane

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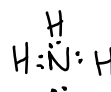
Ch 6 Notes B.ink

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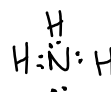
C₂H₆

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Draw the structure of 1000 methane

NH₃ 4e⁻ pairs



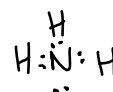
C₂H₆

Drawing Lewis Structures

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Draw the structure of 1000 methane

NH₃ 4^{e-} pairs



C₂H₆ → 14^{e-} → 7^{e-} pairs

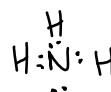
Ch 6 Notes B.ink

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Draw the structure of 1000 methane

NH₃ 4e⁻ pairs



C₂H₆ → 14e⁻ → 7e⁻ pairs

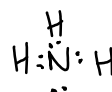


Drawing Lewis Structures

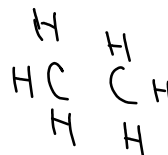
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C₂H₆ → 14e⁻ → 7e⁻ pairs



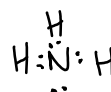
Ch 6 Notes B.ink

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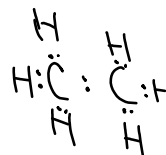
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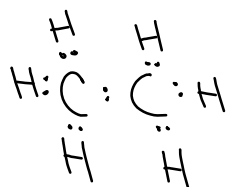
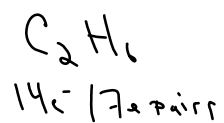
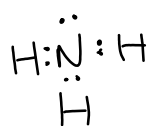
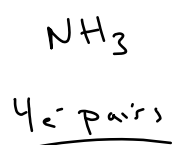
Draw the structure of 1000 methane

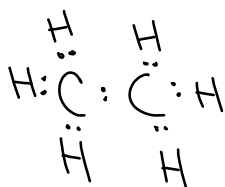
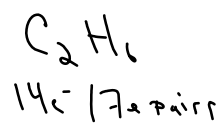
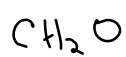
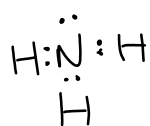
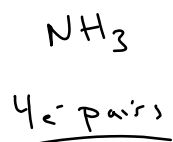
NH₃ 4e⁻ pairs



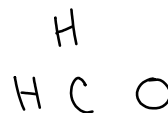
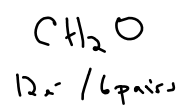
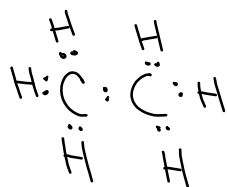
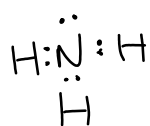
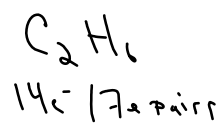
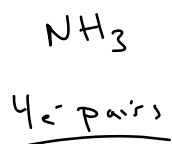
C₂H₆ → 14e⁻ → 7e⁻ pairs



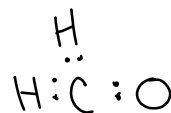
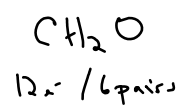
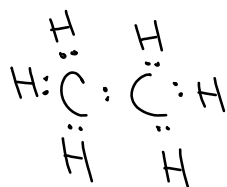
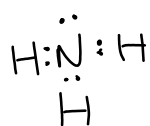
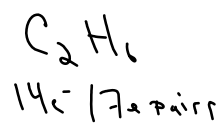
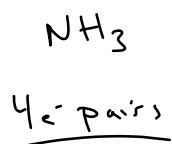


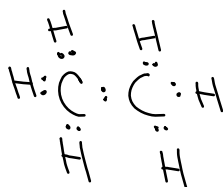
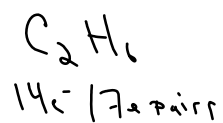
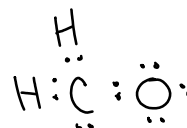
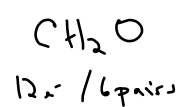
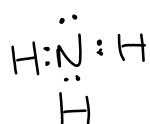
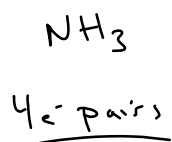


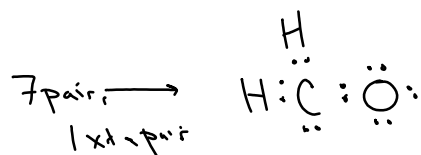
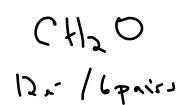
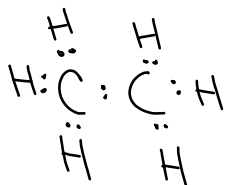
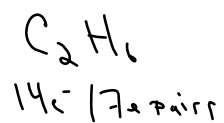
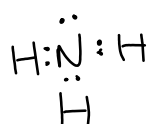
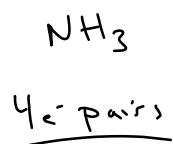
Ch 6 Notes B.ink



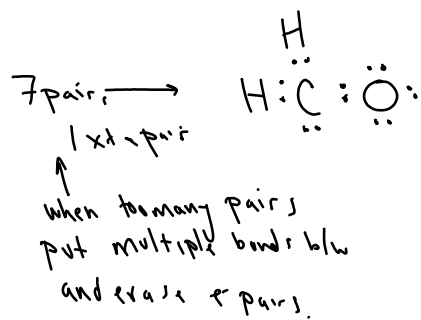
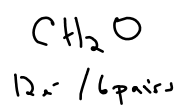
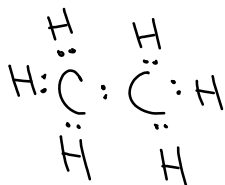
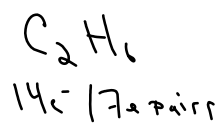
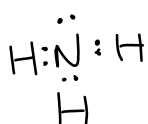
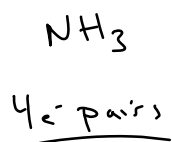
Ch 6 Notes B.ink



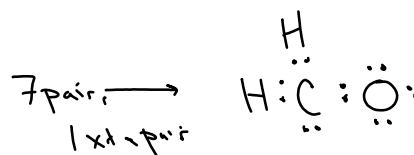
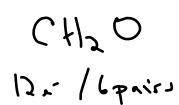
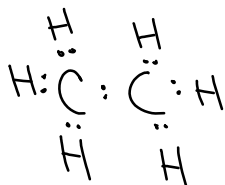
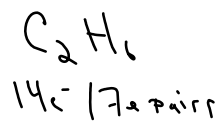
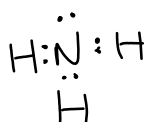
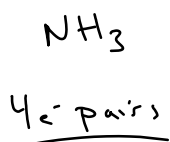




Ch 6 Notes B.ink

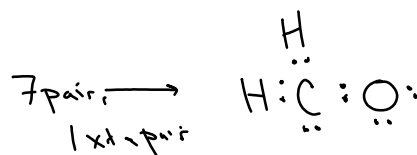
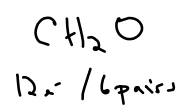
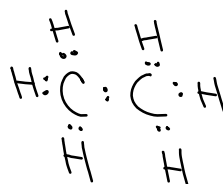
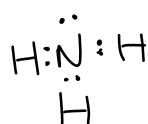
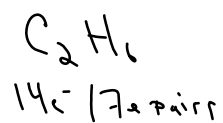
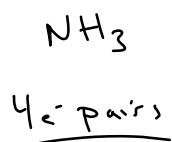


Ch 6 Notes B.ink



↑
when too many pairs
put multiple bonds b/w
and erase e⁻ pairs.

1 pair is erased

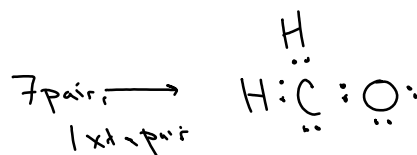
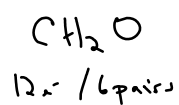
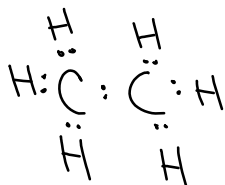
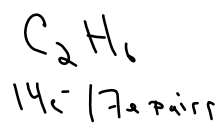
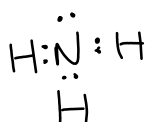
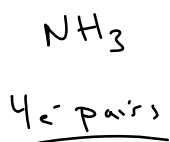


1 x 2 pair

↑
 when too many pairs
 put multiple bonds b/w
 and erase e⁻ pairs.

1 pair is erased

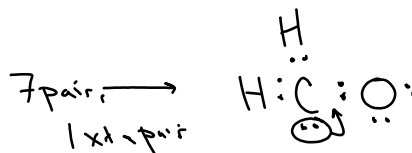
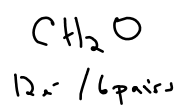
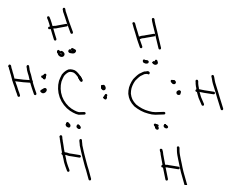
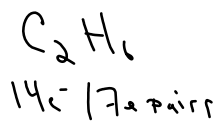
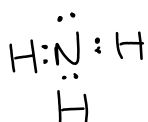
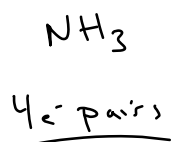
Ch 6 Notes B.ink



when too many pairs
put multiple bonds b/w
and erase e⁻ pairs.

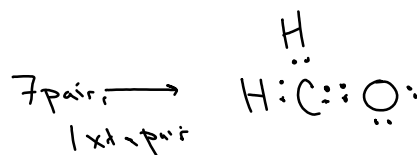
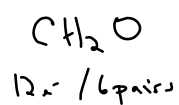
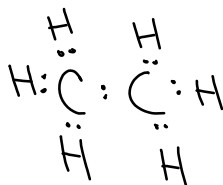
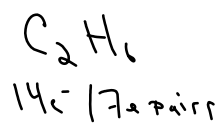
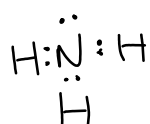
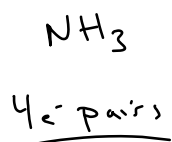
1 pair is erased
Rearrange pairs
to give octet.

Ch 6 Notes B.ink



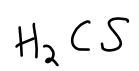
↑
when too many pairs
put multiple bonds b/w
and erase e⁻ pairs.

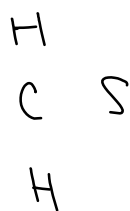
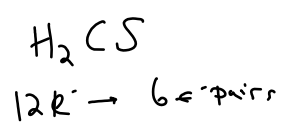
1 pair is erased
Rearrange pairs
to give octet.



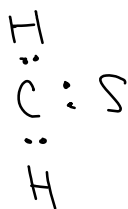
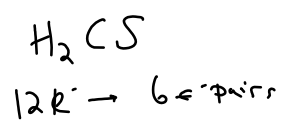
when too many pairs
 put multiple bonds b/w
 and erase 2 pairs.

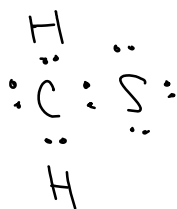
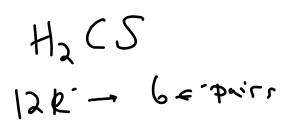
1 pair is erased
 Rearrange pairs
 to give octet.

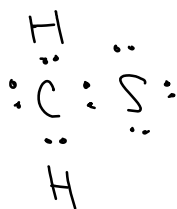
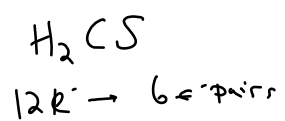


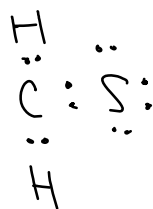
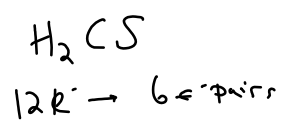


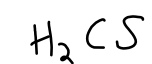
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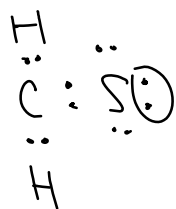


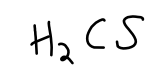




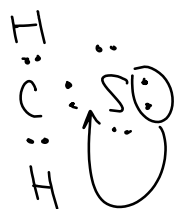


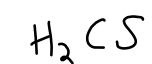
12e⁻ → 6 e⁻ pairs



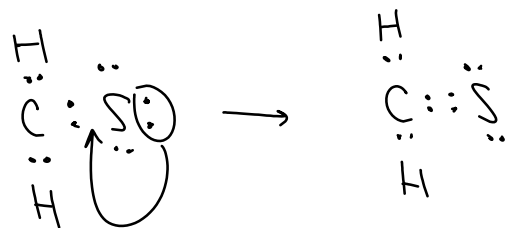


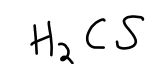
12e⁻ → 6 e⁻ pairs



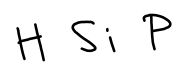
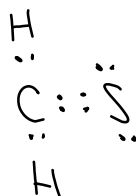
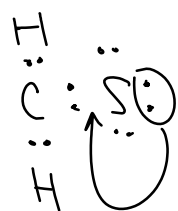


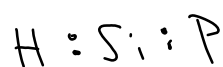
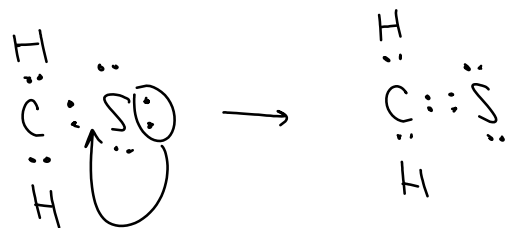
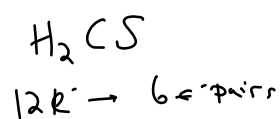
12e⁻ → 6 e⁻ pairs

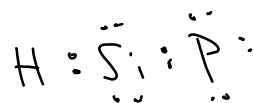
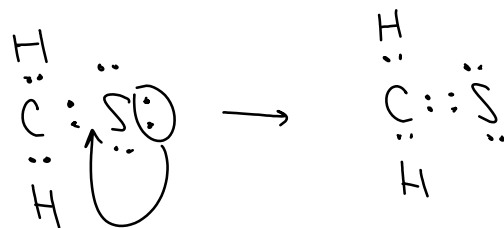
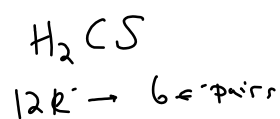


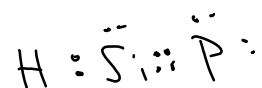
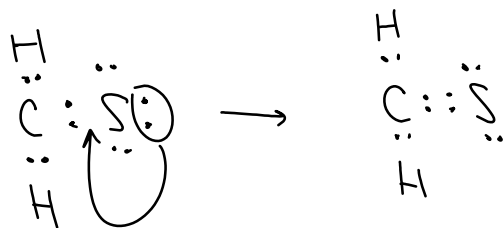
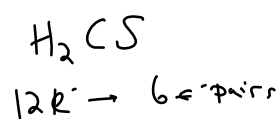


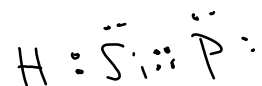
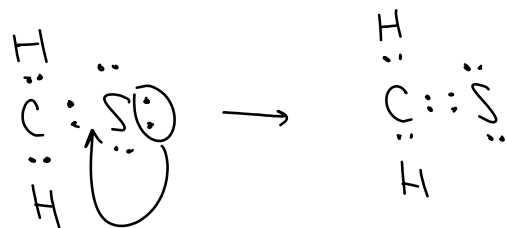
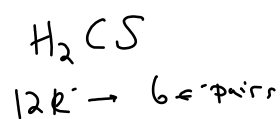
12e⁻ → 6 e⁻ pairs

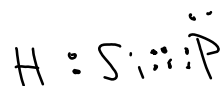
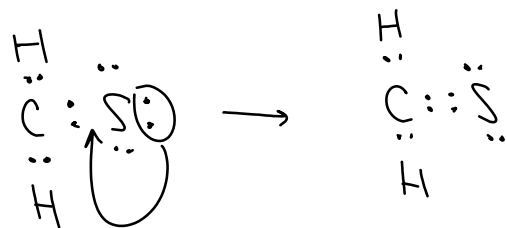
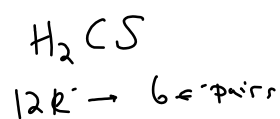




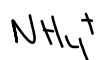
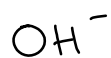




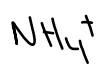
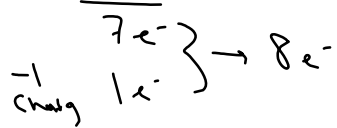
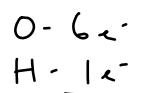
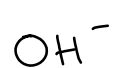




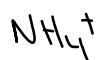
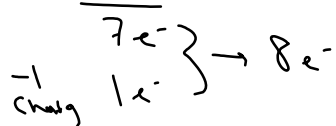
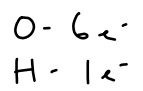
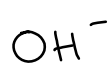
Hydroxide



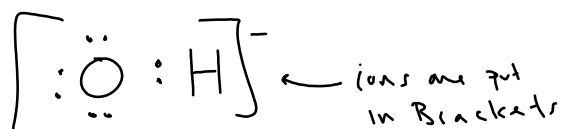
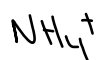
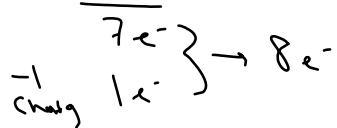
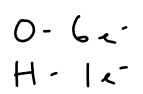
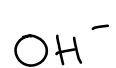
Hydrous Al ions



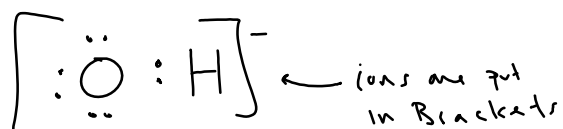
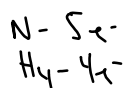
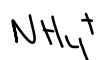
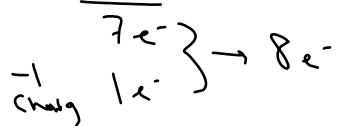
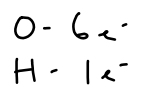
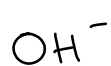
Hydrates of ions



Hydrous Ions

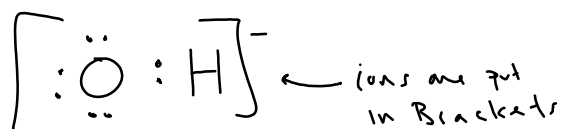
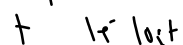
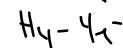
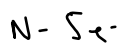
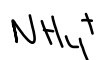
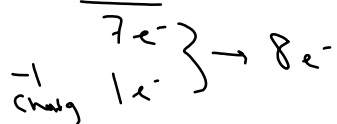
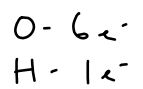
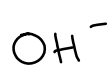


Hydrous Ions

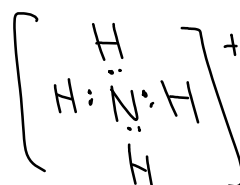
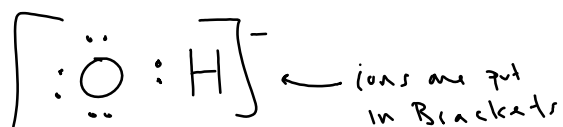
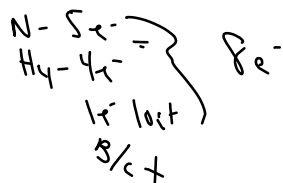
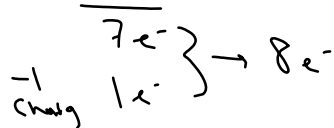
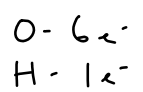
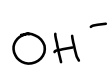


Ch 6 Notes B.ink

Hydrous Ions



Hydrous Ions



Ionic Bonding

Ionic Bonding

Na⁺

Ionic Bonding
(B/w metals + nonmetals)
 Na^+

Ch 6 Notes B.ink

Ionic Bonding
(B/w metals + nonmetals)
 Na^+



Ch 6 Notes B.ink

Ionic Bonding
(B/w metals + nonmetals)
 Na^+



Ch 6 Notes B.ink

Ionic Bonding
(B/w metals + nonmetals)
 Na^+

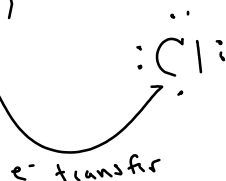


Ch 6 Notes B.ink

Ionic Bonding

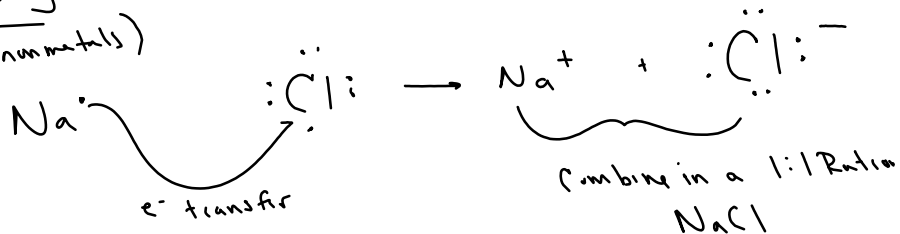
(B/w metals + nonmetals)

Na[•]



Ionic Bonding

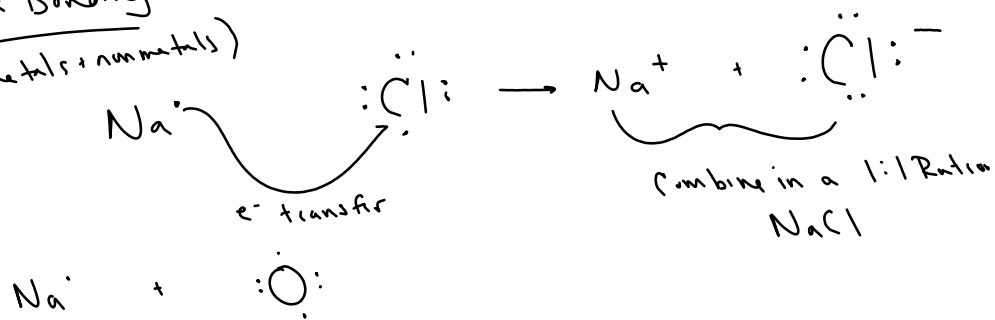
(B/w metals + nonmetals)



Ch 6 Notes B.ink

Ionic Bonding

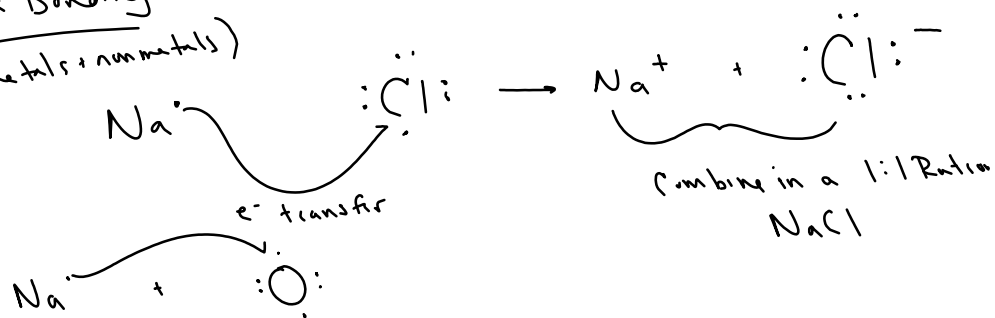
(B/w metals + nonmetals)



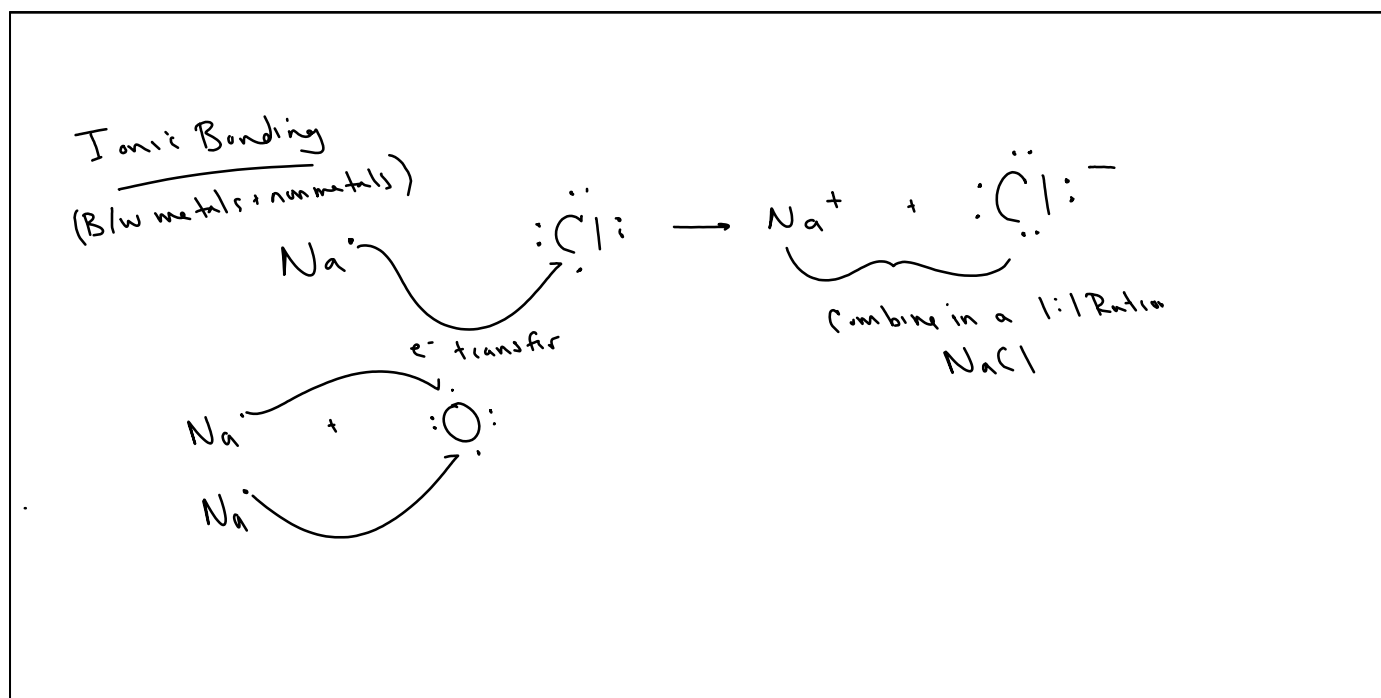
Ch 6 Notes B.ink

Ionic Bonding

(B/w metals + nonmetals)

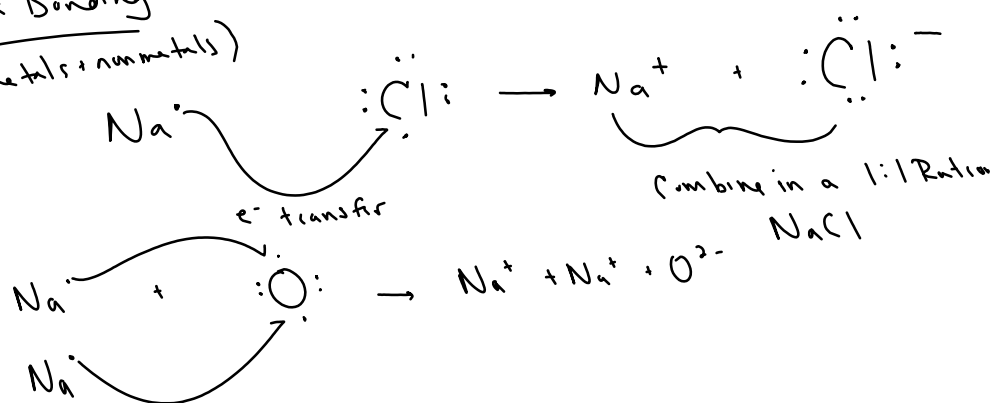


Ch 6 Notes B.ink



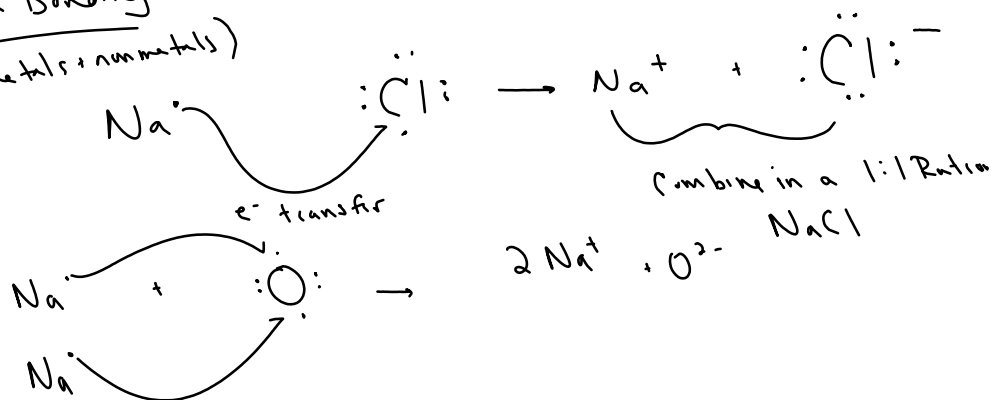
Ionic Bonding

(B/w metals + nonmetals)



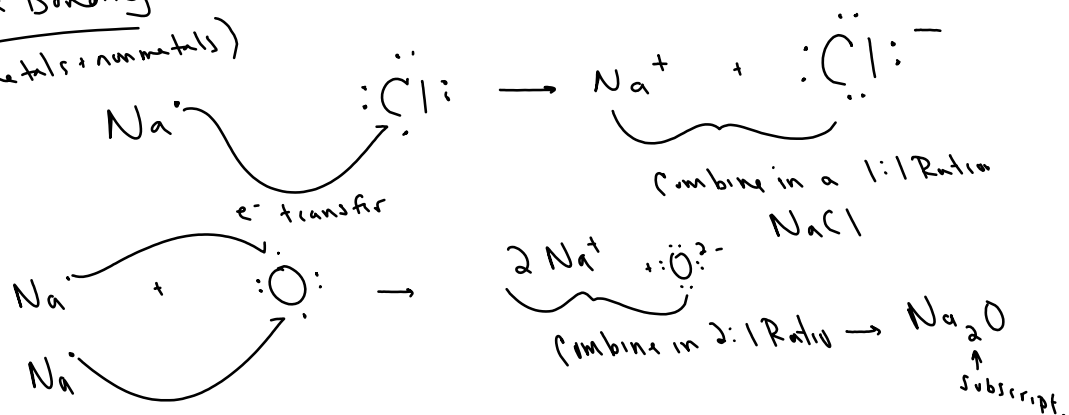
Ionic Bonding

(B/w metals + nonmetals)



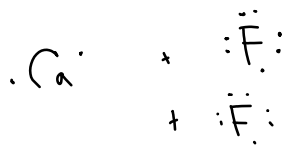
Ionic Bonding

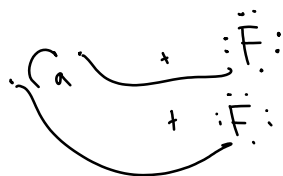
(B/w metals + nonmetals)

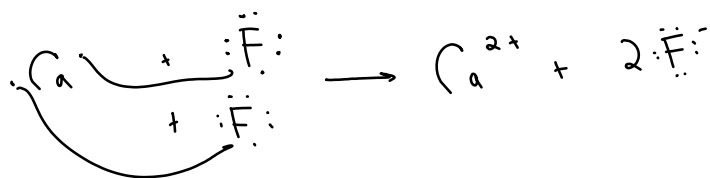


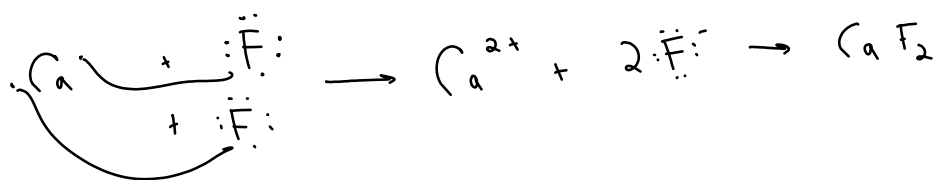
$G_a \times F$

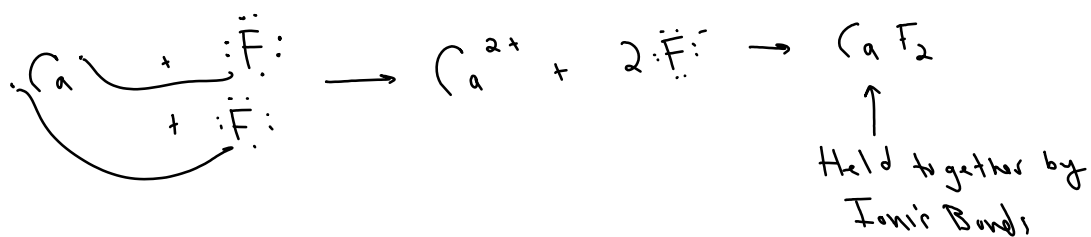


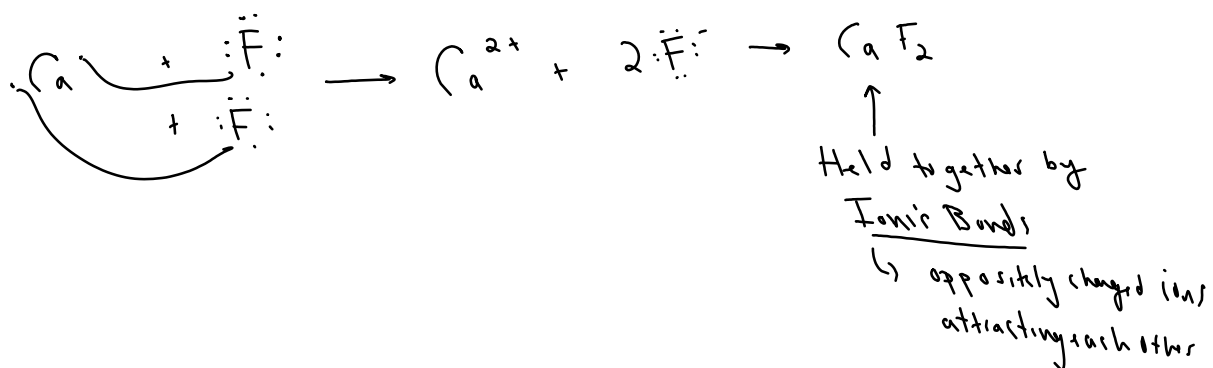












X-ray diffraction Comp
↳ Exist in a crystal Lattice

Atomic Comp

↳ Exist in a crystal Lattice

↳ highly organized Repeating pattern
of + & - ions in various arrangements

xture of ionic Comp

↳ Exist in a crystal Lattice

↳ highly organized Repeating pattern
of $+$ & $-$ ions in various arrangements

multiple $+$ ions bond
to multiple $-$ ions & vice versa

Ionic Comp^s
↳ high Melting Points B/c of Lattice

Ionic Comp^r
↳ high Melting Points B/c of Lattice
MP

NaCl 801°C

Sucrose
(sugar) 186°C

Ionic Comp^s
↳ high Melting Points b/c of Lattice
MP

NaCl 801°C

Sucrose
(cane sugar) 186°C

Ionic Comp^s are Brittle b/c of
the crystal lattice

VSEPR

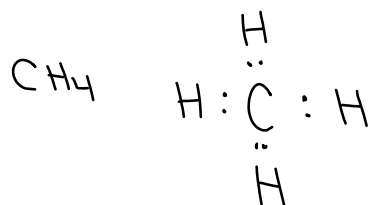
VSEPR
(3D shapes of covalent molecules)

VSEPR
(3D shapes of covalent molecules)

CH₄

Ch 6 Notes B.ink

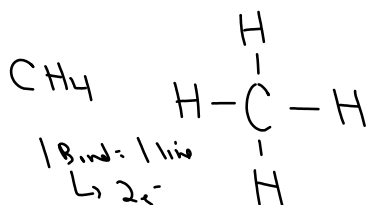
VSEPR
(3D shapes of covalent molecules)



Ch 6 Notes B.ink

VSEPR

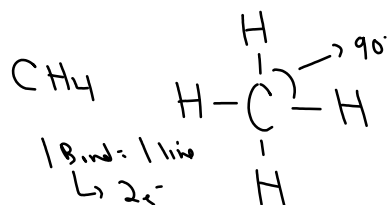
(3D shapes of covalent molecules)



Ch 6 Notes B.ink

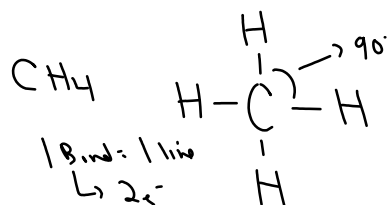
VSEPR

(3D shapes of covalent molecules)



Ch 6 Notes B.ink

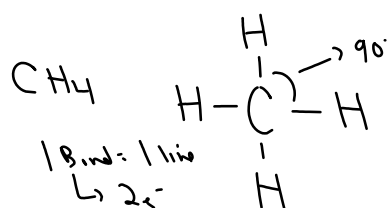
VSEPR
(3D shapes of covalent molecules)



Ch 6 Notes B.ink

VSEPR

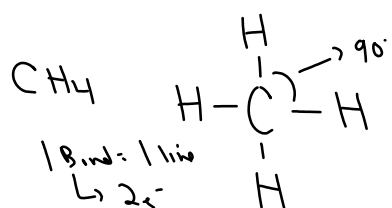
(3D shapes of covalent molecules)



Repulsion b/w the e⁻ in
separate bonds

VSEPR

(3D shapes of covalent molecules)



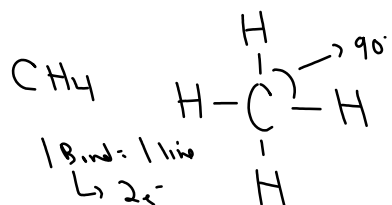
Repulsion b/w the e⁻ in
separate bonds

so Bonds arrange themselves
to be as far apart as possible

Ch 6 Notes B.ink

VSEPR

(3D shapes of covalent molecules)

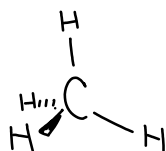


Repulsion b/w the e⁻ in
separate bonds

so Bonds arrange themselves
to be as far apart as possible
in 3D

VSEPR

(3D shapes of covalent molecules)

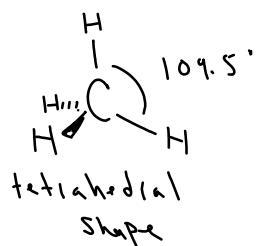


Repulsion b/w the e^- in
separate bonds

so Bonds arrange themselves
to be as far apart as possible
in 3D

VSEPR

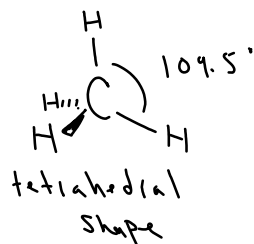
(3D shapes of covalent molecules)



Repulsion b/w the e^- in
separate bonds

so Bonds arrange themselves
to be as far apart as possible
in 3D

VSEPR - valence shell e^- pair Repulsion
(3D shapes of covalent molecules) \hookrightarrow Molecular Geometries are caused
by Bonding e^- Repelling each other



Repulsion b/w the e^- in
separate bonds

so Bonds arrange themselves
to be as far apart as possible
in 3D

Ch 6 Notes B.ink

SEPR Table
Molecule Type

of unshared
e⁻ pairs
on central
atom

Geometry
Type

Bond
<

Ex

Structure

Ch 6 Notes B.ink

SEPR Table
Molecule Type

of unshared
e⁻ pairs
on central
atom

Geometry
Type

Bond
<

Ex

Structure

H₂

Ch 6 Notes B.ink

SEPR Table
Molecule Type

of unshared
e⁻ pairs
on central
atom

Geometry
Type

Bond
<

Ex

Structure

Linear

H₂

H-H

Ch 6 Notes B.ink

<u>SEPR Table</u>	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond <	Ex	Structure
Molecule Type					
A ₂ (two atoms)		Linear		H ₂	H-H

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond <	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂ , HCl	H-H, H- $\ddot{\text{Cl}}$:

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂					

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond <	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂ ↑ Central atom ↗ 2 Branches					

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂ ↑ Central atom ↗ 2 Branches				CO ₂	$\ddot{\text{O}}=\text{C}=\ddot{\text{O}}$

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂ ↑ Central atom ↗ 2 Branches				CO ₂	$\begin{array}{c} \ddot{\text{O}}=\text{C}=\ddot{\text{O}} \\ \text{B}-\text{A}-\text{B} \end{array}$

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂ ↑ Central atom ↗ 2 Branches	○	Linear	180°	CO ₂	$\begin{array}{c} \ddot{\text{O}}=\text{C}=\ddot{\text{O}} \\ \text{B}-\text{A}-\text{B} \end{array}$

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond <	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂	○	Linear	180°	CO ₂	Ö=C=Ö
AB ₃					

Ch 6 Notes B.ink

<u>SEPP Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂	○	Linear	180°	CO ₂	$\begin{array}{c} \text{:}\ddot{\text{O}}=\text{C}=\ddot{\text{O}}\text{:} \\ \text{H} \\ \text{H}-\text{B}-\text{H} \rightarrow \text{H}-\text{B}-\text{H} \\ \text{H} \quad \text{Bent} \end{array}$
AB ₃				BH ₃	

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂	0	Linear	180°	CO ₂	$\ddot{\text{O}}=\text{C}=\ddot{\text{O}}$
AB ₃	0	trigonal planar	120°	BH ₃	$ \begin{array}{c} \text{H}-\text{B}-\text{H} \\ \\ \text{H} \end{array} \rightarrow \begin{array}{c} \text{H} \\ \\ \text{H}-\text{B}-\text{H} \end{array} $
AB ₄					

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂	0	Linear	180°	CO ₂	$\ddot{\text{O}}=\text{C}=\ddot{\text{O}}$
AB ₃	0	trigonal planar	120°	BH ₃	$ \begin{array}{c} \text{H}-\text{B}-\text{H} \\ \\ \text{H} \end{array} \rightarrow \begin{array}{c} \text{H} \\ \\ \text{H}-\text{B}-\text{H} \\ \\ \text{H} \end{array} $
AB ₄				CH ₄	

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂	0	Linear	180°	CO ₂	$\ddot{\text{O}}=\text{C}=\ddot{\text{O}}$
AB ₃	0	trigonal planar	120°	BH ₃	$ \begin{array}{c} \text{H}-\text{B}-\text{H} \\ \\ \text{H} \end{array} \rightarrow \begin{array}{c} \text{H} \\ \\ \text{H}-\text{B}-\text{H} \\ \\ \text{H} \end{array} $
AB ₄				CH ₄	$ \begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array} $

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond <	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂	○	Linear	180°	CO ₂	$\ddot{\text{O}}=\text{C}=\ddot{\text{O}}$
AB ₃	○	trigonal planar	120°	BH ₃	
AB ₄				CH ₄	

Ch 6 Notes B.ink

<u>SEPR Table</u>					
Molecule Type	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
A ₂ (two atoms)	—	Linear	180°	H ₂	H-H
AB ₂	0	Linear	180°	CO ₂	$\ddot{\text{O}}=\text{C}=\ddot{\text{O}}$
AB ₃	0	trigonal planar	120°	BH ₃	$ \begin{array}{c} \text{H}-\text{B}-\text{H} \\ \\ \text{H} \end{array} \rightarrow \begin{array}{c} \text{H} \\ \\ \text{H}-\text{B}-\text{H} \\ \\ \text{H} \end{array} $
AB ₄	0	tetrahedral	109.5°	CH ₄	$ \begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array} \rightarrow \begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array} $ 2D 3D

Ch 6 Notes B.ink

SEPR Table
Molecule Type

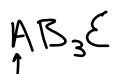
of unshared
e⁻ pairs
on central
atom

Geometry
Type

Bond
<

Ex

Structure



Ch 6 Notes B.ink

<u>SEPR Table</u>	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond <	E ⁻ x	Structure
Molecule Type 3 branches ↓ AB ₃ E ↑ ↑ Central unshared atom e ⁻ pair					

Ch 6 Notes B.ink

SEPR Table	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond <	E ⁻ x	Structure
Molecule Type 3 Branches ↓ AB_3E ↑ ↑ Central unshared atom e ⁻ pair	1			NH_3	

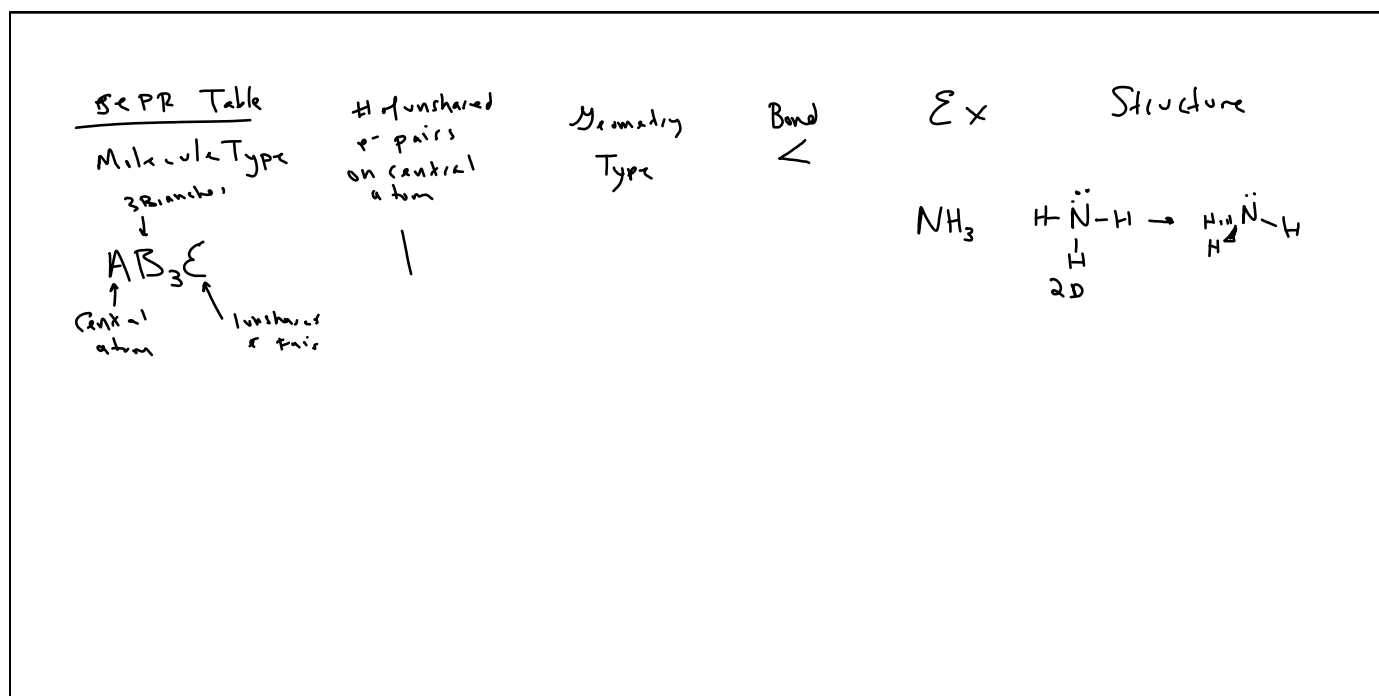
Ch 6 Notes B.ink

SEPR Table	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond <	E ⁻ x	Structure
Molecule Type 3 branches ↓ AB ₃ E ↑ ↑ Central unshared atom e ⁻ pair	1			NH ₃	$ \begin{array}{c} \text{H} \quad \ddot{\text{N}} \quad \text{H} \\ \\ \text{H} \end{array} $

Ch 6 Notes B.ink

SEPR Table	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond <	E ⁻ x	Structure
Molecule Type 3 branches ↓ AB ₃ E ↑ ↑ Central atom unshared e ⁻ pair	1 			NH ₃	$ \begin{array}{c} \text{H} \quad \ddot{\text{N}} \quad \text{H} \\ \\ \text{H} \end{array} $

Ch 6 Notes B.ink



Ch 6 Notes B.ink

SEPR Table	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
Molecule Type 3 branches ↓ AB_3E ↑ ↑ Central atom unshared e ⁻ pair	1	trigonal pyramidal	107°	NH_3	$ \begin{array}{c} \text{H} \ddot{\text{N}} - \text{H} \\ \\ \text{H} \end{array} \rightarrow \begin{array}{c} \text{H} \ddot{\text{N}} - \text{H} \\ \diagup \\ \text{H} \end{array} $ 2D

Ch 6 Notes B.ink

SEPR Table	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
Molecule Type 3 branches ↓ AB_3E ↑ ↑ Central atom unshared e ⁻ pair	1	trigonal pyramidal	107°	NH_3	$ \begin{array}{c} \text{H} \quad \ddot{\text{N}} \quad \text{H} \\ \\ \text{H} \end{array} \rightarrow \begin{array}{c} \text{H} \quad \ddot{\text{N}} \quad \text{H} \\ \diagup \quad \diagdown \\ \text{H} \end{array} $ 2D
AB_2E_2				H_2O	

Ch 6 Notes B.ink

SEPR Table	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
Molecule Type 3 branches ↓ AB_3E ↑ ↑ central atom unshared e ⁻ pair	1	trigonal pyramidal	107°	NH_3	$ \begin{array}{c} H \quad \ddot{N} \quad H \\ \\ H \end{array} \rightarrow \begin{array}{c} H \quad \ddot{N} \quad H \\ \quad \diagup \\ H \end{array} $ 2D
AB_2E_2	2			H_2O	$H - \ddot{O} - H$

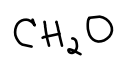
Ch 6 Notes B.ink

SEPR Table	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
Molecule Type 3 branches ↓ AB_3E ↑ ↑ Central atom unshared e ⁻ pair	1	trigonal pyramidal	107°	NH_3	$\begin{array}{c} \text{H} \ddot{\text{N}} - \text{H} \\ \\ \text{H} \end{array} \rightarrow \begin{array}{c} \text{H} \ddot{\text{N}} - \text{H} \\ \diagup \\ \text{H} \end{array}$ 2D
AB_2E_2	2	Bent	104.5°	H_2O	$\text{H} - \ddot{\text{O}} - \text{H}$

Ch 6 Notes B.ink

SEPR Table	# of unshared e ⁻ pairs on central atom	Geometry Type	Bond Angle	Ex	Structure
Molecule Type 3 branches ↓ AB_3E ↑ ↑ Central atom unshared e ⁻ pair	1	trigonal pyramidal	107°	NH_3	$\begin{array}{c} H \\ \vdots \\ H - \ddot{N} - H \\ \vdots \\ H \end{array} \rightarrow \begin{array}{c} H \\ \vdots \\ H - \ddot{N} - H \\ \vdots \\ H \end{array}$ 2D
AB_2E_2	2	Bent	104.5°	H_2O	$\begin{array}{c} H - \ddot{O} - H \\ \vdots \\ H - \ddot{O} - H \end{array}$

Ch 6 Notes B.ink

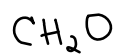


Draw X-ture.

Give Molar Type

Give Geometry

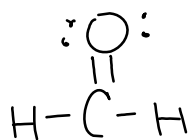
Ch 6 Notes B.ink

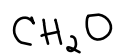


Draw Structure.

Give Molar Mass

Give Geometry

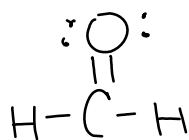




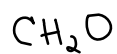
Draw Structure.

Give Molar Type

Give Geometry



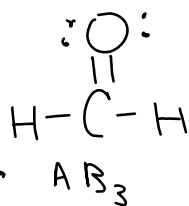
Ch 6 Notes B.ink

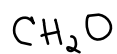


Draw Structure.

Give Molar Type

Give Geometry

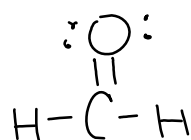




Draw Structure.

Give Molec. Type

Give Geometry



AB_3

trigonal
planar